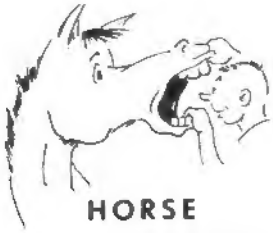
RTTY

NEWS OF AMATEUR RTTY

JUNE, 1958
25 Cents
Vol. 6, No. 6

NCARTS May Meeting



HORSE TRADES

This page of the Bulletin is for use of amateurs who have RTTY EQUIPMENT FOR SALE OR TRADE and those looking for equipment to buy or trade. It is a free service and may be the means of getting someone on the air.

FOR SALE OR TRADE: 14 and 15 equipment W9GRW

TRADE: Full sized L. C. Smith SUPER-SPEED typewriter for 26 ..... W9BQC

FOR SALE: Polar relays, 255A, and Sigma K8DDC

FOR SALE: OCT-3 Freq Shift Monitors W9GRW

FOR SALE: 90 C Wilcox Transmitter W7FNA
505R FSK exciter W7FNA

FOR SALE: 88 mhy Toroids 1.00 each W6CQK

FOR SALE: 96C RTTY transmitter W6BJI

TRADE: Prop pitch motor for RTTY gear W9LNI

FOR SALE: Two model 28s, one console W6EV

FOR SALE: Model 26 with TU or without ..... John B. Harmon
919 East Olive Street, Pomona, Calif.

FOR SALE: Altronics RTTY Converter w/polar W6ORS

WANTED: RTTY, Jan. '54, June thru Dec. 55, Jan thru Dec. 56, Jan. Feb. April 57 ..... W6ORS

WANTED: Typing reperf w/o keyboard and TD or non typing reperf W5TVG

RTTY, Inc.
372 WEST WARREN WAY
Arcadia, California
Return Postage Guaranteed

MAY, 1958 NCARTS MEETING

The long anticipated return of Bruce Rowlings, ZL1WB, to the West Coast after a nine months tour of the United States, was consumated with a dinner meeting of NCARTS held at the El Ranch Motel in Millbrae, California, May 23rd.

Altho the meeting was planned to honor Bruce, (as BEEP, WOBP, said, "NCARTS has found another excuse for one of their outstanding meetings.") Yet up to the very last minute it looked as though Bruce wouldn't be able to make it. Then the long arm of Dick Segerstrom, W6CQI, reached out and collared Bruce and between a bus from W2RUI to Chicago and a plane to California, our guest of honor made it.

ZL1WB, gave a condensed but very intriguing account of his adventures across the United States and back, starting with the landing in this country at the San Francisco Airport, where he was taken in tow by VE2ACF/W6, and others and witnessed his first TV program at Tommys QTH a few moments later.

Bruce indicated that, after taking in the Pacific Division ARRL Convention at Fresno June 7th and 8th and renewing acquaintance with his West Coast friends he would be winging his way home and would be on the air, (RTTY) within a few minutes after his arrival.

K6EER donated a camera outfit as a ladies prize together with two imported Italian flower dishes secured by Isabel, XYL of W6VVF, for ladies prizes donated by NCARTS.

Various RTTY gear was donated for prizes by W6VVF, W6GGC and others and went as follows:

Model 26 Motor won by Frank Johnson, W6JNF; Relay won by Mike Lando, K6OFI; Polar relay won by Chuck Bey, W6PHS; Loop circuit DC power supply won by Doc Graham, W6NKP; Power converter unit for PE104 won by Jack Pitts, W6CQK; DC rectifier went to Norte DeWolfe, W6CBX; Line relay by Archie Waring, W6ACN; and Model 15 keyboard to Charles Thompson, W6UQ.

It was announced that John Reinartz, K6BJ, had suffered another heart attack and is confined to: Oak Knoll Hospital, Oakland, Ward 66A, Room 7 (Captain John L. Reinartz, USNR, retired).

The following signed in for the meeting: W6CBX and XYL, W6NKP, W6VPC and Maribel, W6UQ, K6OFH, W6GGC and Rose, K6ZBL and Vivian, K6KVZ and Marion, W6QMO, Jeri, XYL of W6PHS, W6ASJ and Irene, W6CQI/6, W6VVF and Isabel, W6ACN, VE2ACF/W6, W6NRM, W6LFF, Gin, W6YO and Ruth, W7AXE, ZL1WB, W6AJU, K6OFI, W6CQK, W6JNF, W6CBF, K6EER, W6STY, W6WIS, W6FYM, K6IZY and XYL, W6MXJ and Eleanor, W6NEQ and Ruth and Lou, W6MTJ, OM of W6LFF, W6PHS, Chuck.

Again, our thanks to Gin, W6LFF, for keeping notes to enable us to make the write-up, we hope she will do the same for the RTTY display and demonstration at the Pacific ARRL meeting at Fresno, June 7th and 8th. Don't miss this if you want to enjoy a real RTTY exhibit. Thanks to P.T.&T. for furnishing and installing the latest in TTY gear.

Elliott "Buck" Buchanan, W6VPC,
Secretary-Treasurer, NCARTS.

THE MYSTERY OF THE OVERRIDING CLUTCH

By SAM GOLDFISH, W5TVG

This article is written on the bald assumption that many of the RTTY fraternity (the author included) are not always hot-shot "factory experts" when it comes to locating and repairing mechanical defects which occur deep down in the innards of their teletypewriters. This is justifiably so, since the TTY machine — given a perennial dose of oil — appears to be a pretty reliable pile of pig iron . . . at least, most of the time. So we devote most of our efforts toward the electronics, operating and construction aspects of the hobby, nurturing the secret hope that our machines, like the famed "One-Hoss Shay," will run forever.

The writer was recently plagued with a gradual and insidious trouble in his Model 26, the origin of which was so obscure as to practically defy diagnosis. Now, there are a lot of 26 owners to whom this same trouble could conceivably occur, so perhaps setting forth this tale of woe might rescue some fellow amateur from the same agonizing trouble-shoot.

THE SYMPTOM: The machine in question is a mint-condition, late serial Model 26 which had evidently seen but little service prior to my acquiring same. After several hundred hours of perfect performance, the machine gradually developed brief bursts of rough, jarring noise — when copying at full speed *only*. (368 o.p.m.). Although this intermittent retch was quite violent, it didn't appear to affect the actual performance too much; but by placing your hand on the typing unit, and from the scream of tortured metal, you could tell that something awful was happening inside. All attempts to localize the source of this intermittent gnashing were to no avail. Connect the machine on a local loop, hit the keys hunt-and-peck fashion, everything normal. Hold the keyboard space-bar down and let her run at full synchronous speed — there's the intermittent banging again. The fact that the trouble occurred even on a continuous repeat (like spacing) pretty well eliminated the selector mechanism from suspicion. Turn the motor over slowly, by hand, until you get callouses on your palm — everything checks perfectly; no binding, no springs missing, nothing loose. Re-oil the machine thoroughly: same static.

THE DIAGNOSIS: Something had to give. It did. The screw which pins the upper half of the sawtooth-jaw clutch to the main shaft sheared off. Using the forked end of a Hytron soldering aid tool I was able to extract the sheared-off screw from the shaft, and replace with another 6-40 screw. But now I had a clue!

With visions of a $100 bill sprouting wings, I removed the main shaft assembly!. Everything looked normal, but what in blazes is that fancy-looking gadget, set in the steel gear at the bottom of the main shaft, fastened to the main-shaft driving gear? Five little spring-loaded rollers in a tapered five-point star cage, the entire assembly nesting in a raceway in the steel gear. Ever seen anything like it before? Sure you have. If you're grizzled enough, it's a miniature version of the 1931 Studebaker "Free-Wheeling" clutch which let the driveshaft turn faster than the engine, but not vice-versa. If you sprout peach fuzz on your cheeks, it's the "Coaster Brake" in your bike. Or the recoil starter of your lawnmower or outboard, if you are the outdoors type. The Teletype parts catalog calls it the "Overriding Clutch". It permits slipping in one direction, but locks in the opposite. Well, this little culprit was slipping in *both* directions!

THE CURE: A closer examination indicated that the tiny springs which push the rollers uphill to bear against the raceway were not pushing — either they had lost their "set" or slight wear had shortened them somewhat. At any rate, they could easily be stretched 1/16", which was sufficient to "preload" the rollers into their normal position, and afford the proper one-way action. Replacing the main shaft, the machine ran so smoothly I could hardly believe my ears.

Those of you who have examined your 26's closely, may wonder, like I did, what the purpose of this clutch is. After all, the cam sleeve is positively driven at its top end by the sawtooth-jaw clutch, whereas the overriding clutch, which is connected to the bottom of the cam sleeve, performs no driving function whatsoever. As a matter of fact, it is arranged to *slip* in the driving direction, so why complicate matters by sticking the durn thing in? Well, this mystified me — but eventually it came to light. True enough, the cam sleeve *is* driven by the sawtooth clutch, but there are moments during the rotation of the cam sleeve when the spring-loaded cam followers are riding downhill (i.e. from the high part of the cam

(Continued on Page 10)

W1ZXA RTTY

CENTRAL FALLS, R. I.

I've been reading all your RTTY Bulletins as they have been coming in, and it occurred to me that there never has been much in the way of a blurb in the Bulletin about Rhode Island's one-and-only radio teletype station. Others keep pestering me for a picture of the mess here, and so. I figured that unless I go ahead and send you a couple of pictures with a few words, no one else will ever oblige! This may be a way to let others know what's going on at WIZXA, and that WIZXA may be worked on RTTY for a Rhode Island QSL!

Enclosed are two pictures of the set-up at WIZXA. A few words about each follows. One is an older picture, which was taken before the tape gear but includes part of the 813 transmitter and receiver. The other is strictly an RTTY close-up.

Snap-shot marked "A" on back:

This is WIZXA, RTTY in Central Falls, Rhode Island. Central Falls is up in the north eastern corner of the little state, on the Massachusetts border, five miles north of Providence, R. I. and forty miles south of Boston, Mass. The gear, from left to right, includes the home-built single 813 in the relay rack, the Model 26 printer, and the operating table which holds from top to bottom: Hammarlund HQ-150 receiver, home-built VFO (which drifts like mad!), and the W9LKB terminal unit with built-in WOHZR FSK 'scope indicator. This terminal unit is also home-built. Since this picture was taken, a home-made phone-jack patch board has been added to facilitate switching, and the final r.f. stage of the transmitter has been changed to push-pull 813s for a good 600-watts output on CW and RTTY. Formerly ran only 250 watts with the single 813. The only bands worked on RTTY are 80, 40 and 20, simply because there are no antenna facilities for higher frequencies! (just lazy, I guess! . . .)

Snap-shot marked "B" on back:

This is the teletype corner of WIZXA, between the transmitter and receiver as shown in the picture above. WIZXA has now added tape gear. In the rear, between the Model 26 and the operating table, is a Model 14 typing reperforator with cover removed. (The cover was in the process of being rejuvenated.) To the right of that, on the operating table, is the old faithful Model 14 tape transmitter. The three units are integrated into a home-made patch board for easy switching and connection into the VFO and TU. The typing reperf has no keyboard and is operated from the 26 keyboard, either in series with the 26 printer or "blind." Great delight is taken in the fact that all this stuff actually works! . . .

Further remarks, aside from the pictures:

Also in our repertoir of RTTY gear are the little incidentals that most have, such as an AFSK generator, bias distortion meter, spare terminal unit, etc.

Unfortunately, the operator is employed in New Jersey, and must spend a lot of time out there, since commuting 200 miles is out of the question. Space facilities in New Jersey do not permit operating RTTY from there, so the teletype gear remains "at home" in Rhode Island. This is much to the advantage of those who would like to get a contact with R. I. on RTTY. (Beep, WOBP, has already worked WIZXA RTTY, no fear! ! . . .)

When, then, can you hear WIZXA on RTTY? Frequent weekend trips are made to Rhode Island, which puts WIZXA on the air at least one Saturday night out of every month. So, if you are on the air RTTY on either 80 or 40 meters, give a listen on Saturday nights for WIZXA; you might just come across Rhode Island! Starting in July, we'll have 600 watts for you, and will start burning up 14.040 and 14.340 Mc. on twenty for you W6- and W7-ers!

Eventually, all this RTTY gear, and all the ham gear at WIZXA for that matter, will be moved to new home in the Garden State of New Jersey. Unless we can convince some other Rhode Islander to go RTTY, this will mean the end of FSK from the smallest state in the Union. Get your QSO's in now!

FREQUENCY SHIFTING YOUR HT-32

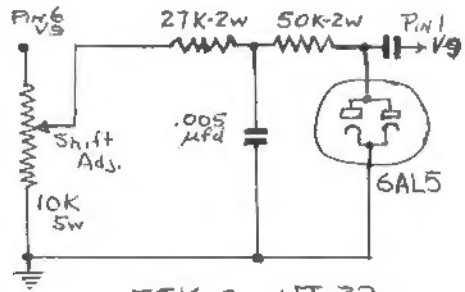
By DICK McNUTT, W8CAT

During the last months of 1957, I finally was able to get my model 26 to print quite well, but it was also quite evident that our old VFO was not going to do a very good job of transmitting unless I had an oscillator without the usual "drift-ittes".

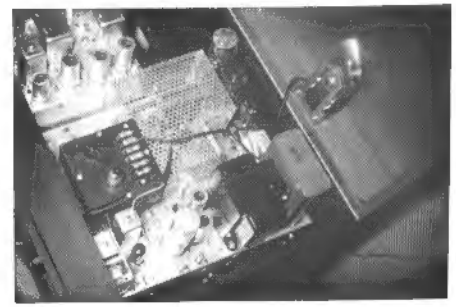
The purchase of an HT-32 was finally decided on and then we began to run into some troubles. As we were quite new at this RTTY stuff, and in looking over the several copies of RTTY that I had, I was unable to find any direct information regarding the best way to FSK the 32. A letter to the Hallicrafter Co., brought back their information that they didn't recommend frequency shifting the oscillator in any manner, but did recommend that I use AFSK and feed the two tones in to the SSB position of the exciter. Having had some degree of success in the previous vfo with fsk methods on the oscillator and with the article in RTTY for October 1957 by Frank White, W3PYW, using a system on his KSW-1, I decided to start from there.

A small box of 2x4x4 was used to house the 6AL5 diode, a 10K 5 watt pot and the resistors and condensors needed, and keeping in mind the thought that we did not want to make a lot of holes in the new equipment, we decided to use one of these test tube sockets that are put out by various companies. It is only necessary to remove the oscillator tube V-9, of the 32, place this test socket in its place and plug in the tube. As all of the tube pins are now exposed to easy view it is easy to solder directly on to them. The filament for the 6AL5, may be taken directly off of the socket or from the pilot light leads that are near where I mounted the utility box. The necessary B plus needed for the hot end of the 10K pot was taken from the screen grid supply at number 6 pin on the test socket. A shielded piece of co-ax cable was run to the grid number 1 of the socket and we were in business. As also noted by W3PYW, there will be a difference in the calibration on the dial of the 32, which amounts to about 9 or 10 kcs, and seems to be the same on all bands used. The photo shows the position to mount the box. Fasten one side of it to the shielding cover, covering the two 6146 tubes. Leave the bottom of this box off, so that it will lay over the tops of tubes V6, 8, and 10, the 12BY7, is too tall, therefore the need for removing the bottom of the box.

With this system, there is no need to make extra holes in your HT-32 or in anyway mar its appearance.

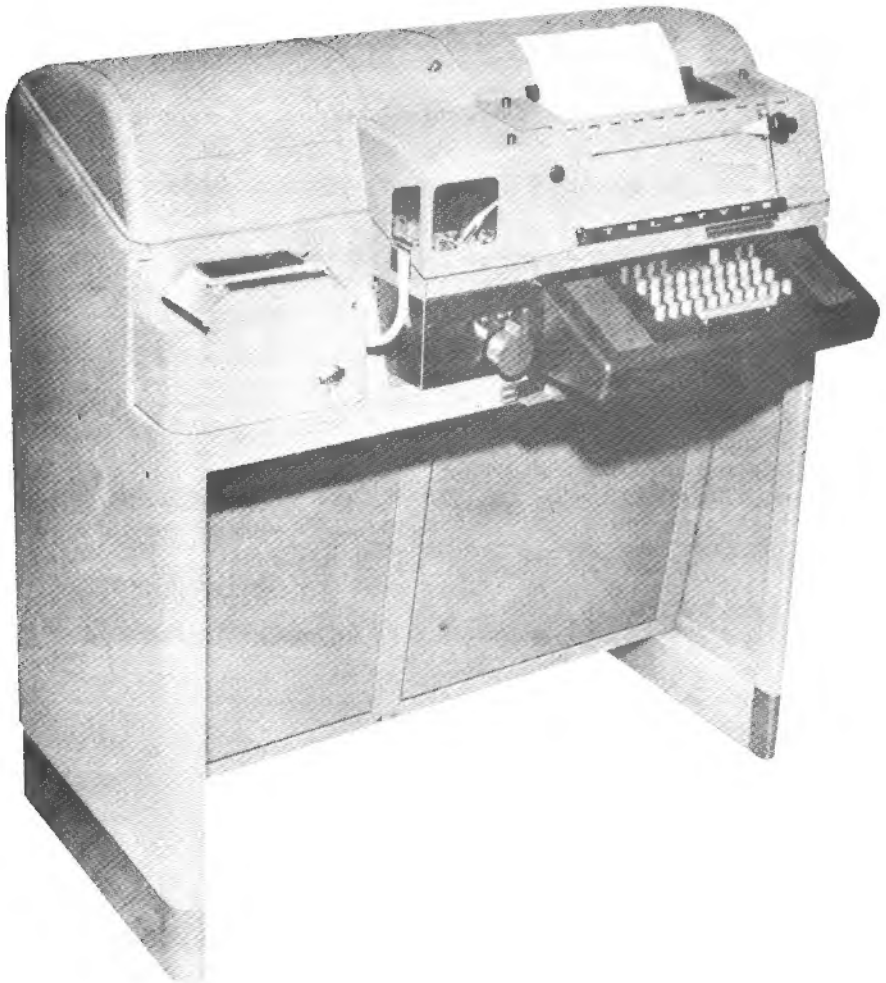


FSK for HT-32



Teletype Model 28 Automatic Send-Receive Set

(ASR)



GENERAL PURPOSE

Answering the needs of printed communications, automation techniques and anticipated related applications, a new series of Teletype equipment was developed and designated the Model 28 line.

The Teletype Model 28 Automatic Send-Receive Set is the most versatile unit in the new Model 28 line of Teletype equipment. Its primary function is to serve as a complete, high-capacity message originating station. It broadens the entire scope of operations made possible through the years by the popular Teletype Model 19 Set.

The Model 28 ASR Set incorporates combinations of the following Model 28 basic mechanisms in a single, compact console:

(1) Keyboard Base (LAK)
(2) Page Printer (LP)
(3) Perforator (LPE, LTPE, LRPE or LPR)
(4) Tape Transmitter (LXD, LAXD, LBXD or LCXD)
(5) Motor Unit (IMU)
(6) Electrical Service Unit (LESU)

OPERATION

With the Model 28 ASR Set the operator can select, by means of a control lever, any one of three operating conditions to meet an immediate communications need. Selection is made manually by turning the keyboard control knob to either of the following settings:

(1) KEYBOARD Setting
. . . permits the operator to send messages directly by use of the keyboard to another station or group of stations. A record of the copy is available on the local page printer for monitoring or for future reference.

(2) KEYBOARD-TAPE Setting
. . . permits keyboard operation for transmission of messages and simultaneous mechanical perforation of tape.

(3) TAPE Setting
. . . places the keyboard in a non-transmitting condition for direct, mechanical perforation of tape at high speed, up to 150 WPM, independent of the normally available 60, 75 or 100 WPM speeds. In this and in the Keyboard-Tape setting the transmitter can be operated to handle tape transmission.

BASIC VARIATIONS

The versatility of the general purpose Model 28 ASR Set can be further extended to perform additional functions by adding or substituting other basic components.

For example, the basic non-typing perforator (LPE) in the Model 28 ASR Set could be replaced with one of the following units:

(1) Printing tape perforator (LTPE)
(2) Non-typing reperforator (LRPE)
(3) Typing reperforator (LPR)

Likewise, the single-contact transmitter distributor (LXD) in this composite set could be replaced with one of the following units:

(1) Fixed-gate transmitter distributor (LBXD)
(2) Pivoted-head transmitter distributor (LAXD)
(3) Combination pivoted-head and fixed-gate transmitter distributor (LCXD)

The Model 28 line, in all its combinations, can be the basis for a new installation and is compatible with many other types of Teletype equipment to expand present systems.
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For Information Regarding the Society Contact the Following:

W6CLW—Ed Simmons
W6AEE—Merrill Swan
W6SCQ—Lewis Rogerson

For Traffic Net Information:
W6FLW W6IZJ

For "RTTY" Information:
W6CL W6DEO W6AEE

Due to the long Bulletin last week we regret that we forgot to mention the VHF dinner. It was scheduled by Phil WOJHS in Anoka last evening and was the usual fine success with about 30 attending. RTTY fellows were represented by WOJHS, WOAUS, WODFP, WORVH, WOBP, and several about to get the new look into teletype operation.

The Twin City "RATS" have a very interesting meeting scheduled for tomorrow evening, starting at 7:30 p. m. at the office of Verne Holman room 1054, McKnight Bldg., 415 Second Avenue South in downtown Minneapolis. After the business meeting we sign up for the demonstration around the block at the NW Telephone Bldg., 8th floor. Those arriving late will not be admitted above the 1st floor of the phone bldg. without security clearance obtained by calling FE 2-4112, Extension 6166 (coin will be returned—it says here). The long anticipated demonstration on maintenance and adjustment of the Model 26 will take place. For those not interested (Huh?) there will be a tour conducted of the long lines quarters. A talk on the Towoco portable teletype transmission measuring set will also be given. Coffee at nine p. m.

The Twin Cities section of the Institute of Radio Engineers will hold a meeting Thursday, May 15th, sponsored by the "broadcast transmission systems" professional group. The speaker will be H. L. Woodbury, electrical design engineer, Andrew Corp. and his talk will be on "High Power VHF-UHF Coaxial Transmission Lines, Wave-Guides and Components." Eight P.M. at the Boulevard Room, Calhoun Beach Hotel, 2730 West Lake Street on Highways 169 and 212. Also a tour of WTCN and WTCN-TV Studios in the same building.

When Byron and Wayne make their attacks against an un-named unscrupulous dealer in machines and list those believed honest, an injustice is done such persons as Harold Wade W7HRC and his Puget Sound Amateur RTTY Society by being omitted. Harold is a quiet hard working fellow liked by all of us that have met him, and he has distributed more than 200 Model 26 machines the past four or five years without a cent of profit that we know of, and it is hoped the injustice can be remedied.

The big event for the coming week is the Armed Forces Day Saturday and we are pleased to note no farce like last year in the scheduling of time and frequencies. Full details appear in QST for May, pages 64 and 180. Particular attention is invited to the opportunity to work Frank and Phil at NSS on 3319, 6970 and at times also 20,050. We gathered from discussing this with them in New York that they plan quite a ball! They will tell you over the air the frequencies they are listening on. Two years ago we worked them on both bands from WOBP and last year on all three bands early in the contest. They will use big rhombic antennas pointed this way and just a handfull of watts will raise them. Everybody turn out to work NSS and get their cards for wall ornaments . . .

QST QST QST DE WOBP WOBP WOBP.

THE MYSTERY

(Continued from Page 4)

to the lower), which could cause the cam sleeve to rotate *faster* than its driving clutch, and ratchet ahead. In effect, the cam sleeve could thus arrive home a tiny fraction before the rest of the machinery has completed its cycle, and believe me, boys, the MACHINE DOESN'T LIKE THAT ONE BIT! That's where the overriding clutch comes in. Whenever the cam sleeve tries to go faster than its driving shaft, the overriding clutch grabs hold and holds her down to shaft speed.

[1]Proper procedure for removing the Main Shaft:

Remove 3 thumb screws mounting typing unit to keyboard, disconnect motor and remove typing unit from keyboard.
Unhook printer arm spring, front shaft clutch throwout lever spring and the lifting bail yield spring. Make sure the first two springs won't fall off their hooks.
Rotate the motor until the type wheel lifting bail auxiliary cam roller is on the peak of its cam. (See Bulletin 159, Fig. 14. Reprints available from RTTY.) Remove 2 screws mounting front shaft bracket and remove bracket by lowering it to clear the inner cam surface. See Fig. 27. (Don't lose the rollers!)
Remove the ribbon. Remove the 2 screws mounting the ribbon mechanism, and remove ribbon plate.
Remove the left screw mounting the range finder and loosen the right screw. Remove the range finder.
Remove the selector cam sleeve (the top retaining cap has a LEFT HAND THREAD). Remove the four screws mounting the main shaft bearings and remove the main shaft. Again, be careful not to lose the roller which rides in the upper channel of the main cam sleeve.
Remove the jam nut and nut from the bottom of the main shaft, remove the screw which pins the gears to the main shaft and there's the overriding clutch. Better do this operation over a cigar box so as not to lose any of the tiny springs or rollers.
When reassembling, be sure to replace all the shims at the bottom of the shaft.

BEHIND THE GREEN KEYS

Don Wiggins, W4EHU

FLASH!!! Radioteletype has now come of age! The new edition of the ARRL Handbook has devoted space to RTTY! Their treatment is not the best but at least we are "officially" recognized now! The W2PAT converter is shown and is a simple circuit for a first try. My recommendation is to omit the polar relay and use the single ended circuit. I have several good, simple converter circuits which I will be glad to send along for a self-addressed, stamped envelope.

FLORIDA ACTIVITY . . .

The Miami area takes the spotlight this month thanks to a newsy note from Andy. Bob, W4BWQ is giving his index finger a rest while he builds a new shack and gets his antenna farm cultivated . . . K4IFR, Chester, is a 14mc RTTYer and is getting out fine. There is some DX to be worked up above the fone band. Bill, W4HGE is doing a lot of printing with a new converter. Hope to see you on the keyboard end soon, Bill. W4AYV, Nat, in Umatilla, says he has "really got the bug" and is getting a Model 26. Nat says that W2ZKV in NY has Model 26's for immediate delivery at $75 plus $15 for crating and delivery to station. Fred, W4WMU is on from Miami Beach. (See "Station of the Month". Bert, W4EAS has ordered some toroids and is getting ready to build a super-duper terminal unit. W4WMN, Albert in Jax is all fixed up with an improved converter and is building up a crystal FSK circuit for the Florida MARS frequency . . . If you are active on RTTY and don't find your call here, it's your fault!!! Drop us a QSL and give us the dope . . .

AUTOSTART . . .

The ultimate in ham communication might well be RTTY using autostart. In the large population areas there are often 50 to 100 stations on 2 meter RTTY and many of them build low-drain receiving systems which are left on a net frequency 24 hours a day. By means of a relay operated from the presence of an incoming carrier, anyone else con start up their printer and leave a message at any time. Other systems are to have the receiver turn on by clock switch during a five minute period at the beginning of each hour a,nd to have "selective" calling schemes. Understand that K4IFR is trying to build up interest in the Miami area for 2 meter work . . . Maybe you all could try autostart, Chester . . . This type of autostart is not suitable for the low frequency bands, of course, because we would have CW stations, foregin fones, etc. starting up our printers!